

Advanced PV Inverters

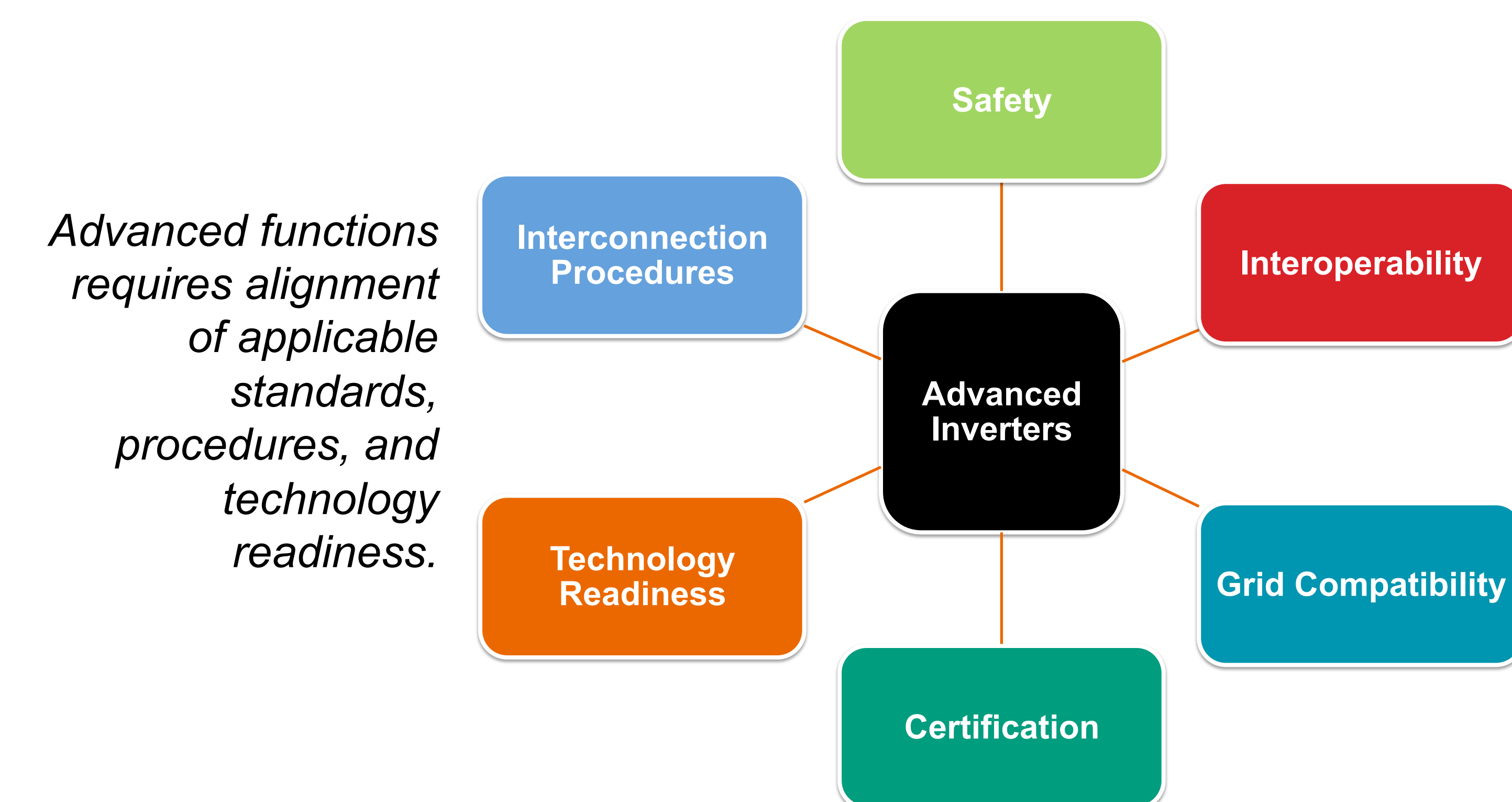
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SYSTEMS INTEGRATION

INVERTERS ARE THE KEY

PV inverters have the capability to provide grid support with advanced functionality. This capability will be critical to maintain system reliability in high penetration scenarios, and to enhance the overall value of PV.



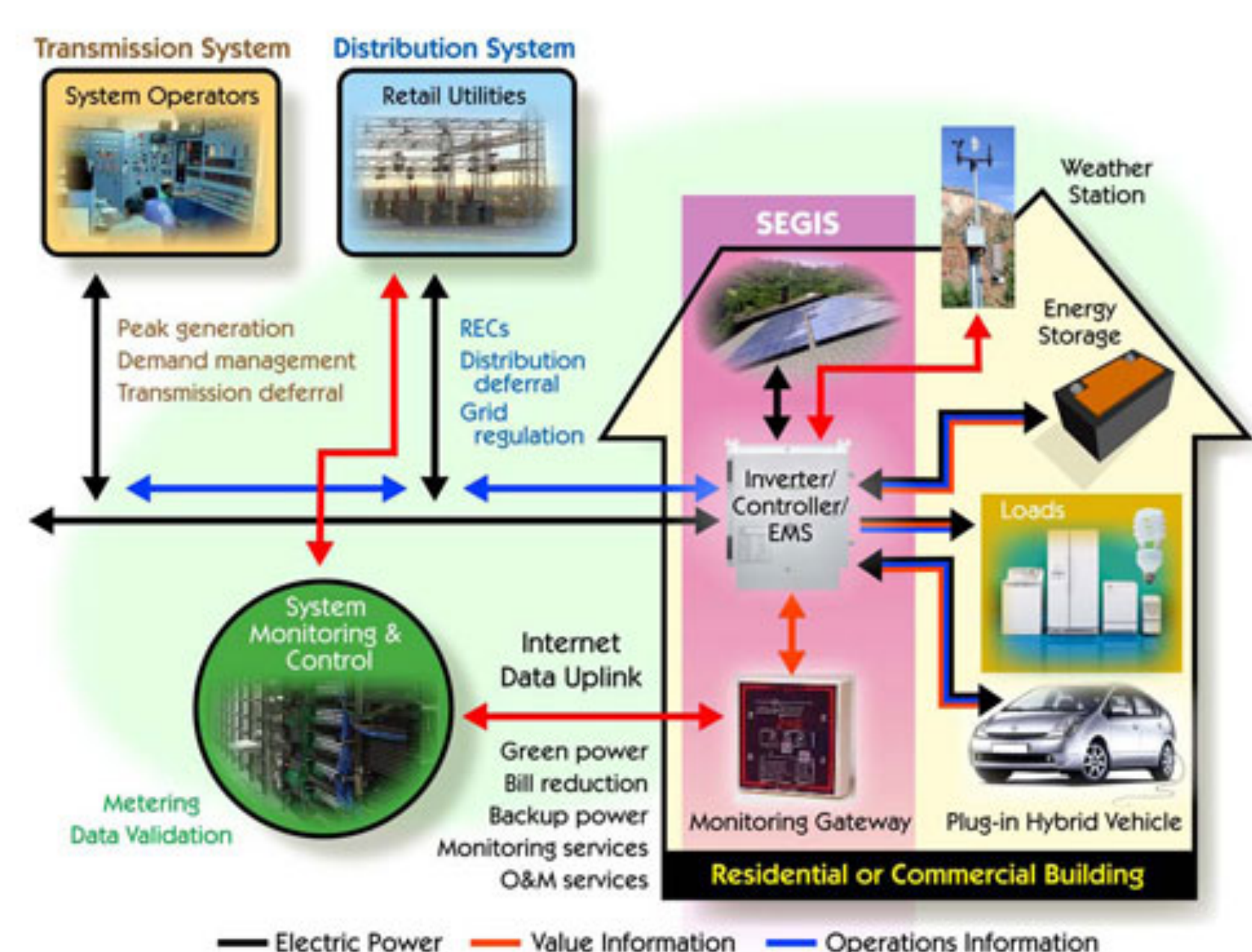
Some examples of advanced inverter functionality

Voltage support and reactive power control
Frequency support and active power control
Enhanced voltage and frequency tolerance
Enhanced anti-islanding capability
Full interoperability with protection and controls

PV INVERTER TECHNOLOGY DEVELOPMENT

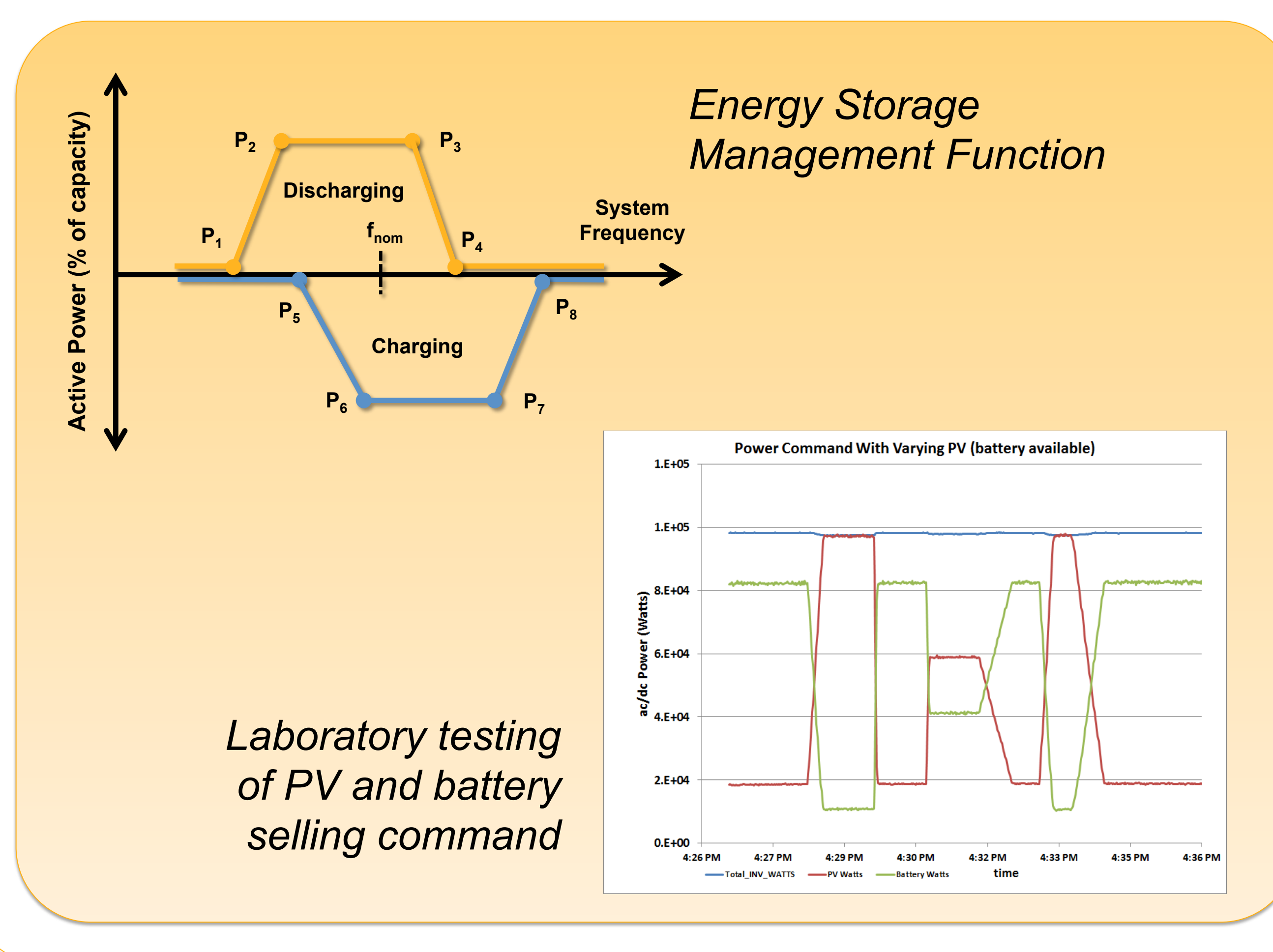
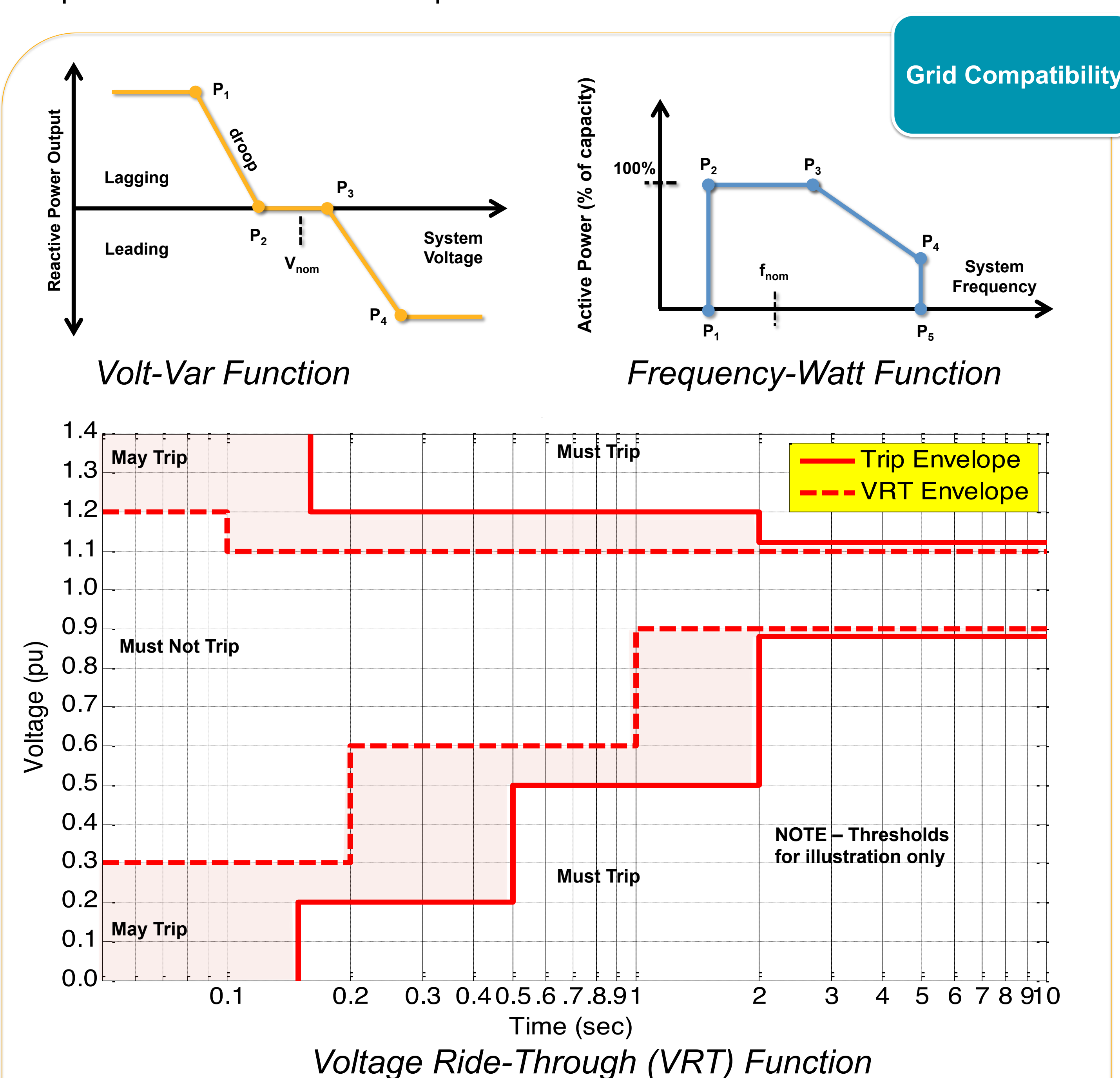
Technology Readiness

The Solar Energy Grid Integration Systems (SEGIS) program is a major technology development initiative focused new PV inverter technologies for high penetration PV



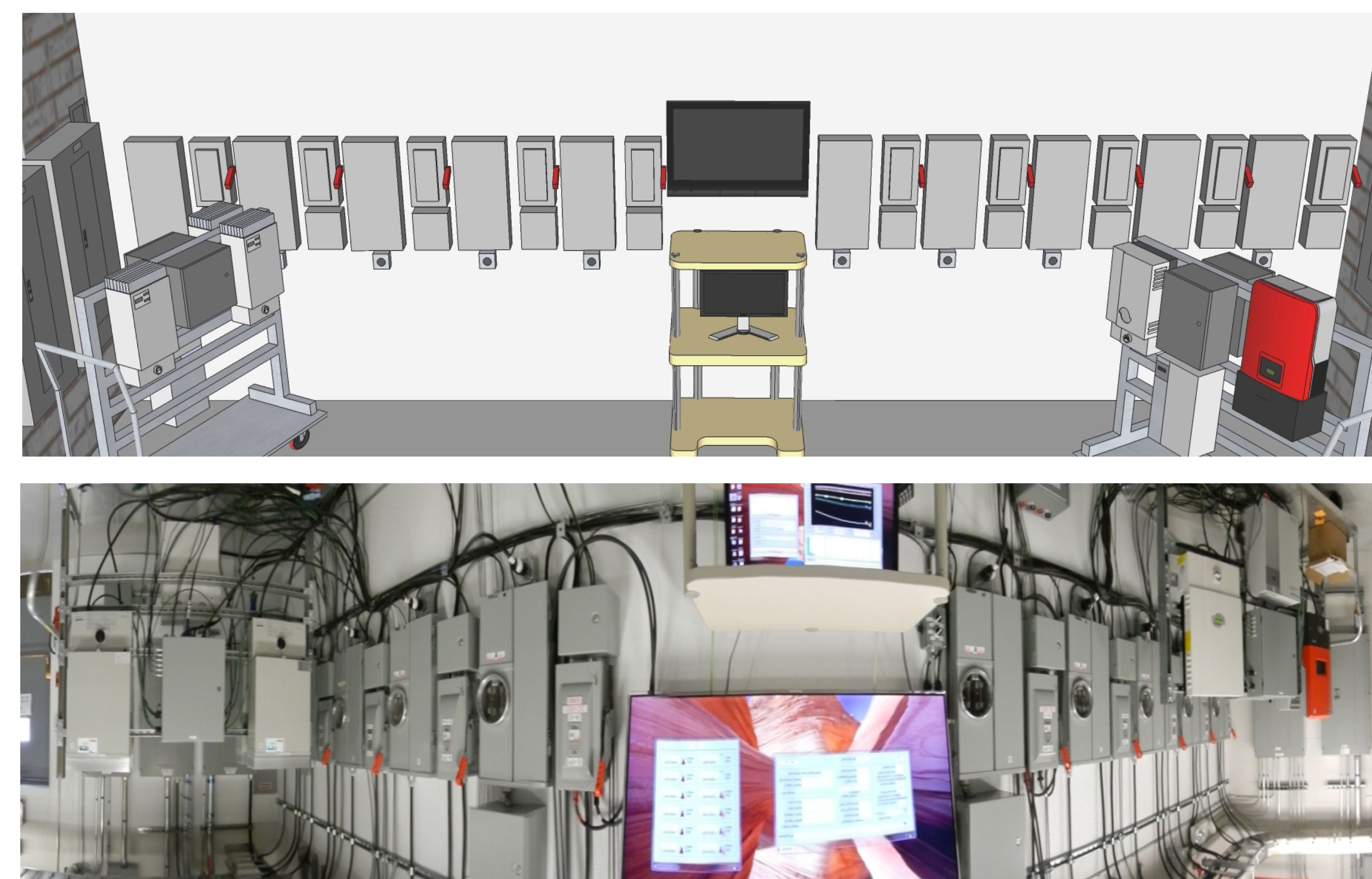
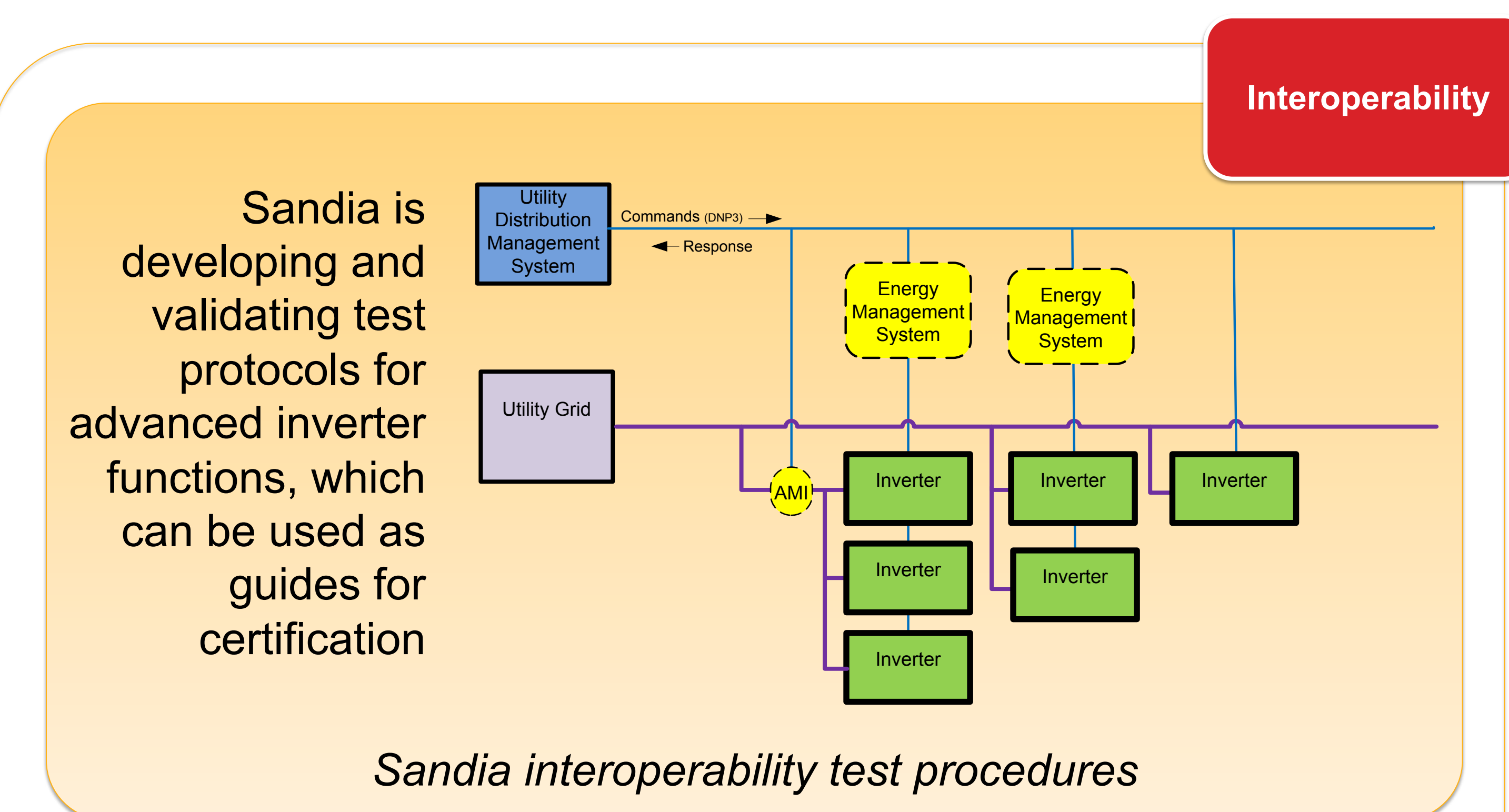
DEFINITION OF ADVANCED FUNCTIONS

Sandia works with industry to fully define advanced functionality before adoption in standards and implementation in commercial inverters.



TESTING AND VALIDATION

Ability to fully test advanced functionality is required to support technology development and validation.



Multi-Inverter interoperability and electrical performance test platform at Sandia

OUTLOOK

- ❖ Advanced functions in commercial and residential applications can allow for higher PV penetration and can increase PV system value.
- ❖ Advanced functionality is feasible, but full deployment requires further technology development, as well as updating standards and procedures.
- ❖ Sandia is developing and validating new test protocols to evaluate advanced inverter functionality.